ABSTRACT OF THE DISCLOSURE

Disclosed is an amplitude-scaling resilient audio watermarking apparatus and method. An encoding apparatus includes: a polyphase filterbank for dividing an audio signal into a plurality of subbands; a psychoacoustic module for applying a psychoacoustic model to the audio signal to provide a signal-to-mask ratio; a watermark encoder for evaluating an encoding parameter from the subbands according to the signal-to-mask ratio and embedding the encoding parameter and a watermark into subbands corresponding to the middle frequency; and a synthesis filterbank for synthesizing the subband signals to output a watermarked audio signal. A decoding apparatus includes: a polyphase filterbank for dividing a received audio signal into the predetermined number of subbands; an EM estimator for estimating an scale factor from an encoding parameter contained in the audio signal and a watermarked subband according to an EM algorithm, and generating the quantizer step size Δ_d of a decoder according to the amplitude-scaling; a watermark decoder for extracting a watermark from a subband corresponding to the middle frequency considering the quantizer step size; and an integrated determiner for integrating outputs of the watermark decoder to determine a watermark.